



## MPFL Reconstruction w TTO

### Postoperative Therapy Plan

Date of Surgery: \_\_\_\_\_

Details of Surgery: \_\_\_\_\_

Surgeon: \_\_\_\_\_

Next Follow Up with MD/PA: \_\_\_\_\_

Additional Info: \_\_\_\_\_

#### Restrictions/Precautions:

##### **WB Precautions:**

- TTWB to PWB (20%) with brace as below x 6 weeks due to TTO

##### **Brace:**

- Locked in extension x 4 weeks
- 4 weeks postop: Unlock 0-30°
- 5 weeks postop: Unlock 0-60°
- 6 weeks postop: Unlock 0-90°
- 7 weeks postop: Wean out of brace

##### **Other Precautions:**

- ROM limited from full extension to 90° in NWB position x 4 weeks
- Weeks 4-6: ROM limited from full extension to 120° in NWB positions
- Avoid lateral patellar glides until 6+ weeks
- Hold bike x 4 weeks

#### **Important Notes:**

1. Weeks and months are designated in their relationship to the postoperative timeline in the grids below (e.g. Week 1 indicates postoperative days 0-7).
2. If a precaution/restriction is listed x 4 weeks it indicates **a full 4 weeks**, so it is lifted after day 28.
3. Notes above supersede any notes in the grid below, as they indicate the surgeon's preferences for this individual patient and the circumstances of their surgery.

Phase 1: Acute Postop (Weeks 1-3)	
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Brace locked in extension x 4 weeks, PWB up to 20%</li> <li>2. ROM limited from full extension to 90° in NWB position x 4 weeks.</li> <li>3. Avoid lateral patellar glides</li> <li>4. Hold bike x 4 weeks</li> </ol>
<b>Rehab Focus</b>	<ul style="list-style-type: none"> <li>• Graft and TTO protection</li> <li>• Pain and swelling reduction</li> <li>• Knee mobility: hyperextension to 90°</li> <li>• Quad activation</li> <li>• Gait training in braced locked into extension PWB</li> <li>• Patient education</li> </ul>
<b>Interventions to Consider</b>	<p><u>Pain and swelling:</u></p> <ul style="list-style-type: none"> <li>- Ice, compression, elevation, ankle pumps</li> </ul> <p><u>Mobility:</u></p> <ul style="list-style-type: none"> <li>- PROM of knee into flexion (to 90°) and extension, attention to hyperextension</li> <li>- AROM into flexion (to 90°) and extension</li> <li>- Low intensity, long duration stretches (eg. heel prop)</li> </ul> <p><u>Strength/Activation:</u></p> <ul style="list-style-type: none"> <li>- Quad sets progressing to SLR without lag</li> <li>- NMES</li> <li>- BFR encouraged if appropriate</li> </ul> <p><u>Gait:</u></p> <ul style="list-style-type: none"> <li>- PWB up to 20% with brace locked in extension</li> </ul>
<b>Criteria for Progression to Phase 2:</b> ____ AROM 0-90° in NWB positions ____ SLR without extension lag	

Phase 2: Subacute Postop (Weeks 4-7)	
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. <u>Weeks 4-6:</u> NWB ROM limited from full extension to 120°</li> <li>2. <u>4 weeks:</u> Brace unlocked 0-30°, PWB (20%)</li> <li>3. <u>5 weeks:</u> Brace unlocked 0-60°, PWB (20%)</li> <li>4. <u>6 weeks:</u> Brace unlocked 0-90°, Progressive WB to FWB</li> <li>5. <u>7 weeks:</u> Wean out of brace</li> </ol>
<b>Rehab Focus</b>	<ul style="list-style-type: none"> <li>• Graft and TTO protection</li> <li>• Pain and swelling reduction</li> <li>• Knee mobility: hyperextension progressing to full per guidelines</li> <li>• Quad endurance</li> <li>• Gait training with progressive knee flexion in brace, eventually without brace</li> <li>• Proprioception</li> </ul>

<p><b>Interventions to Consider</b></p> <p><i>Continue previous interventions as appropriate</i></p>	<p><u>Mobility:</u></p> <ul style="list-style-type: none"> <li>- Continued attention to knee hyperextension</li> <li>- Progressive knee flexion</li> <li>- Stationary bike without resistance</li> </ul> <p><u>Strength+ endurance:</u></p> <ul style="list-style-type: none"> <li>- BFR encouraged if appropriate, attention to quad engagement/endurance</li> <li>- Introduce CKC exercises in pain free range with brace, <b>PWB until week 6</b></li> <li>- Progress proximal (hip + core) strength/endurance</li> </ul> <p><u>Neuromuscular Re-Education:</u></p> <ul style="list-style-type: none"> <li>- <b>Week 6:</b> Proprioception + single leg stability</li> </ul> <p><u>Gait:</u></p> <ul style="list-style-type: none"> <li>- Work toward even WB without compensation in brace at 6 weeks</li> <li>- Attention to TKE integration into gait, ample swing limb clearance</li> </ul> <p><u>Cardio:</u></p> <ul style="list-style-type: none"> <li>- Stationary bike without resistance</li> <li>- Initiation of swimming or pool walk/jog if incisions fully closed</li> </ul>
<p><b>Criteria for Progression to Phase 3:</b></p> <p>____ Symmetric extension AROM</p> <p>____ SLR x 20 without extension lag</p> <p>____ FWB without gait deviation</p> <p><b>Important Milestones:</b></p> <p>____ Flexion AROM within 80% of uninvolved</p> <p>____ Pain free DL squat to 60° with symmetric loading</p>	

Phase 3: Late Postop (Weeks 8-12)	
<p><b>Rehab Focus</b></p>	<ul style="list-style-type: none"> <li>• Graft + TTO protection</li> <li>• Functional movement optimization</li> <li>• Strength progression to SL: extensive attention to knee mechanics</li> <li>• Neuromuscular control + endurance</li> </ul>
<p><b>Interventions to Consider</b></p> <p><i>Continue previous interventions as appropriate</i></p>	<p><u>Mobility:</u></p> <ul style="list-style-type: none"> <li>- Knee ROM normalized</li> </ul> <p><u>Strength:</u></p> <ul style="list-style-type: none"> <li>- PREs for LE strengthening</li> <li>- Progress SL CKC loading with attention to mechanics</li> </ul> <p><u>Neuromuscular Re-Education:</u></p> <ul style="list-style-type: none"> <li>- Proprioception + single leg stability:             <ul style="list-style-type: none"> <li>○ Progress to include ball tosses, neurocognitive challenges as appropriate</li> </ul> </li> </ul>

	<u>Gait:</u> - WNL FWB gait mechanics, step over step ascent and descent with stairs  <u>Cardio:</u> - Continued cycling, swimming, elliptical
<b>Criteria for Progression to Phase 4:</b> ____ Maintain symmetric extension ROM ____ Minimal to no joint effusion with activity ____ Pain free DL squat to 90° with optimal mechanics  <b>Important Milestones:</b> ____ Flexion AROM normalized ____ SL stance x 60 sec without LOB, prevention of genuvalgum	

Phase 4: Progressive Functional (Months 3-4)	
<b>Rehab Focus</b>	<ul style="list-style-type: none"> <li>• SL strength + endurance</li> <li>• Eccentric control</li> <li>• Light impact acceptance + mechanics</li> </ul>
<b>Interventions to Consider</b>  <i>Continue previous interventions as appropriate</i>	<u>Strength:</u> - Continued progression of quad, hamstring, proximal strength + control - Increased emphasis on SL loading  <u>Functional Training:</u> - Continue SL stability progression: <ul style="list-style-type: none"> <li>○ Reaches outside of BOS, ball tosses, neurocognitive challenges as appropriate</li> </ul> - Initiate submax sagittal plane hop progression with attention to mechanics: <ul style="list-style-type: none"> <li>○ DL symmetric &gt; DL asymmetric &gt; SL hop</li> </ul> <u>Cardio:</u> Continued cycling, swimming, elliptical
<b>Criteria for Progression to Phase 5:</b> ____ SL squat x 10 with optimal mechanics ____ LQYBT composite ≥ 75%  <b>Important Milestones:</b> ____ Knee Flexion ROM within 5° of uninvolved ____ HS and Quad strength ≥ 75% LSI ____ Optimal mechanics with SL hopping in place x 30	

Phase 5: Initial Sport Specific (Months 4-5)	
<b>Rehab Focus</b>	<ul style="list-style-type: none"> <li>• Strength progression</li> <li>• Power development, plyometric progression and mechanics</li> <li>• Initiate return to run progression</li> <li>• Multidirectional movement control</li> </ul>

<p><b>Interventions to Consider</b></p> <p><i>Continue previous interventions as appropriate</i></p>	<p><u>Strength:</u></p> <ul style="list-style-type: none"> <li>- Continued progression of quad, hamstring, proximal strength + control</li> <li>- SL strength and stability with increased load</li> </ul> <p><u>Power + Plyometrics:</u> with attention to mechanics:</p> <ul style="list-style-type: none"> <li>- Moderate intensity</li> <li>- Progress power &amp; eccentric control</li> <li>- Progress speed of force generation</li> </ul> <p><u>Sport Specific Prep:</u></p> <ul style="list-style-type: none"> <li>- Increase difficulty of neurocognitive tasks</li> <li>- Initiate running progression if: <ul style="list-style-type: none"> <li>- Quad strength: <math>\geq 70\%</math> LSI</li> <li>- Optimal mechanics with SL hopping in place x 1 min</li> <li>- 30+ SL squat in 1 min to <math>30^{\circ}</math>-<math>45^{\circ}</math> knee flexion with optimal mechanics</li> <li>- WNL running mechanics in in clinic trial</li> </ul> </li> <li>- <b>Month 5:</b> Initiate deceleration activities, lateral hops with optimal mechanics</li> </ul> <p><u>Cardio:</u></p> <ul style="list-style-type: none"> <li>- Continued cycling, swimming, elliptical</li> <li>- Initiate progressive return to run program as appropriate</li> </ul>
<p><b>Criteria for Progression to Phase 6:</b></p> <p>____ HS &amp; Quad Strength <math>\geq 80\%</math> LSI</p> <p>____ LQYBT asymmetry <math>&lt; 6</math> cm (A, PL, &amp; PM) &amp; <math>\geq 90\%</math> Composite</p> <p>____ Good tolerance &amp; optimal mechanics with DL and SL hopping</p> <p><b>Important Milestones:</b></p> <p>____ Quad strength <math>&gt;70\%</math> BW</p> <p>____ HS strength <math>&gt;50\%</math> BW</p>	

Phase 6: Return to Sport Prep (Months 6-9)	
<p><b>Rehab Focus</b></p>	<ul style="list-style-type: none"> <li>• Optimize physical performance, power, and capacity</li> <li>• Symmetrical strength and power</li> <li>• Sport specific movements and patterns</li> <li>• Patient confidence in return to sport</li> </ul>
<p><b>Interventions to Consider</b></p> <p><i>Continue previous interventions as appropriate</i></p>	<p><u>Strength:</u></p> <ul style="list-style-type: none"> <li>- Continued progression of quad, hamstring, proximal strength + control</li> <li>- Functional loaded strengthening progressions</li> </ul> <p><u>Sport Specific:</u></p> <ul style="list-style-type: none"> <li>- High intensity sport specific movement re-training, sport specific drills</li> <li>- Power and plyometric under fatigued conditions, neurocognitive demands</li> </ul> <p><u>Cardio:</u></p> <ul style="list-style-type: none"> <li>- Continued cycling, swimming, elliptical, running</li> </ul>

**Criteria for Return to Sport: See SLHS Return to Sport Testing Protocol**

- ☐ LQYBT composite  $\geq 95\%$
- ☐ Hop Testing LSI  $\geq 95\%$
- ☐ Quad and Hamstring LSI  $\geq 95\%$
- ☐ Hamstring to Quad ratio  $\geq 67\%$
- ☐ Quad Torque  $\geq 3\text{Nm/Kg}$

**Follow up with surgeon regarding official return to sport status. Most literature indicates that 7-9 months postop is the optimal timeline for return to sport.**